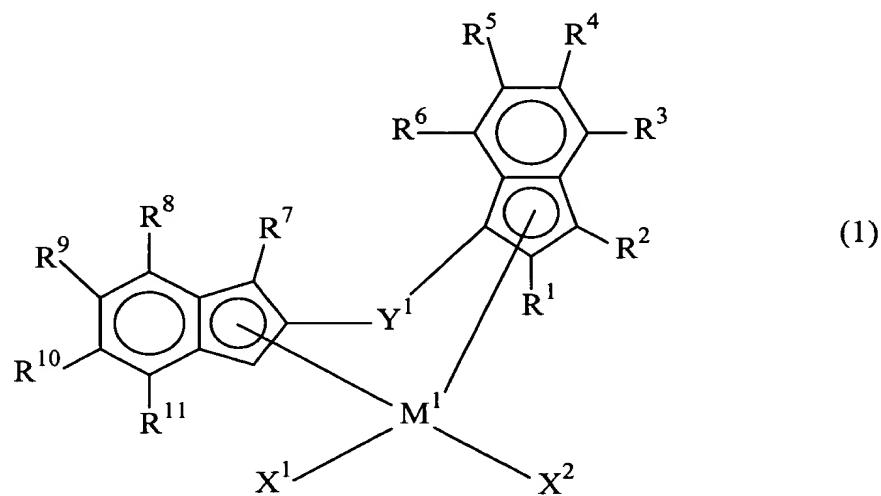


carbon atoms, in the presence of an olefin polymerization catalyst that contains (A) a transition metal compound of the Group 4 of the Periodic Table represented by the following general formula (1), and (B) at least one selected from (B-1) aluminiumoxy compounds and (B-2) ionic compounds capable of reacting with the transition metal compound to give cations:

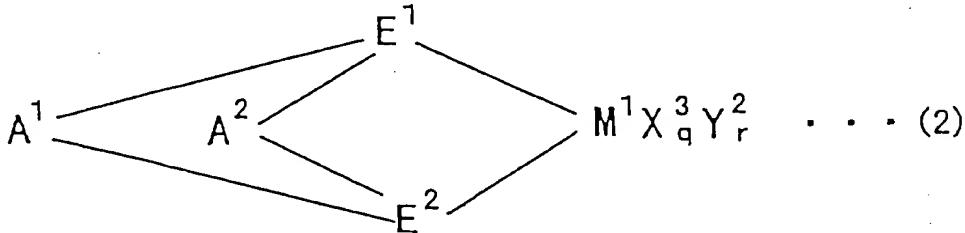


wherein R¹ to R¹¹, and X¹ and X² each independently represent a hydrogen atom, a halogen atom, a hydrocarbon group having from 1 to 20 carbon atoms, a halogen-containing hydrocarbon group having from 1 to 20 carbon atoms, a silicon-containing group, an oxygen-containing group, a sulfur-containing group, a nitrogen-containing group, or a phosphorus-containing group; R³ and R⁴, and R⁸ and R⁹ may be bonded to each other to form a ring; Y¹ is a divalent crosslinking group that crosslinks the two ligands, representing any of a hydrocarbon group having from 1 to 20 carbon atoms, a halogen-containing hydrocarbon group having from 1 to 20 carbon atoms, a silicon-containing group, a germanium-containing group, a tin-containing group, -O-, -CO-, -S-, -SO₂-, -NR¹²-, -PR¹²-, -P(O)R¹²-, -BR¹²- or -AlR¹²-; R¹² represents a hydrogen atom, a halogen atom, a hydrocarbon group having from 1

to 20 carbon atoms, or a halogen-containing hydrocarbon group having from 1 to 20 carbon atoms; M^1 represents titanium, zirconium or hafnium.

16. A method for producing the propylene polymer of claim 1, which comprises polymerizing propylene or propylene with ethylene and/or an α -olefin having from 4 to 20 carbon atoms, in the presence of an olefin polymerization catalyst that contains (A) a transition metal compound of the Group 4 of the Periodic Table represented by the following general formula (2), and (B) at least one selected from (B-1) aluminiumoxy compounds and (B-2) ionic compounds capable of reacting with the transition metal compound to give

cations:



wherein M^1 represents titanium, zirconium or hafnium; E^1 and E^2 each are a ligand selected from a cyclopentadienyl group, a substituted cyclopentadienyl group, an indenyl group, a substituted indenyl group, a heterocyclopentadienyl group, a substituted heterocyclopentadienyl group, an amido group, a phosphido group, a hydrocarbon group and a silicon-containing group, and they form a crosslinked structure via A^1 and A^2 , and they may be the same or different; X^3 represents a σ -bonding ligand, and a plurality of X^3 's, if any, may be the same or different, and it may be crosslinked with other X^3 , E^1 , E^2 or Y^2 ; Y^2 represents a Lewis base, and a plurality of Y^2 's, if any, may be the same or different, and it may be crosslinked with other Y^2 , E^1 , E^2 or X^3 ; A^1 and A^2 each are a divalent crosslinking group that crosslinks the two ligands, representing any of a hydrocarbon group having from 1 to 20

carbon atoms, a halogen-containing hydrocarbon group having from 1 to 20 carbon atoms, a silicon-containing group, a germanium-containing group, a tin-containing group, -O-, -CO-, -S-, -SO₂-, -NR¹²-, -PR¹²-, -P(O)R¹²-, -BR¹²- or -AlR¹²-, R¹² represents a hydrogen atom, a halogen atom, a hydrocarbon group having from 1 to 20 carbon atoms, or a halogen-containing hydrocarbon group having from 1 to 20 carbon atoms; and A¹ and A² may be the same or different; q is an integer of from 1 to 5, indicating ((valence of M¹) -2); and r is an integer of from 0 to 3.

17. The method for producing the propylene polymer as claimed in claim 15, wherein propylene or propylene with ethylene and/or an α -olefin having from 4 to 20 carbon atoms is polymerized in a vapor phase.

18. The method for producing the propylene polymer as claimed in claim 15, wherein propylene or propylene with ethylene and/or an α -olefin having from 4 to 20 carbon atoms is polymerized in the presence of liquid propylene.--